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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,098	02/19/2004	Carmen Flosbach	FA1224USNA	4752
23906 7590 05/18/2009 E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1122B 4417 LANCASTER PIKE WILMINGTON, DE 19805				
EXAMINER				
SERGENT, RABON A				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
05/18/2009		ELECTRONIC		

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CARMEN FLOSBACH,
WIEBKE BECKER, and STEFANIE MATTEN

Appeal 2009-002777
Application 10/782,098
Technology Center 1700

Decided:¹ May 14, 2009

Before TERRY J. OWENS, KAREN M. HASTINGS, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 4, 7 and 10, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a process for producing polyurethane di(meth)acrylates which, the Appellants state (Spec. 1:10-12), are useful as binders in powder coating compositions. Claim 1 is illustrative:

1. A process for the production of polyurethane di(meth)acrylates in which 1,6-hexane diisocyanate is reacted, without solvent and without subsequent purification operations, with a diol component and hydroxyethylacrylate or hydroxypropylacrylate, in the molar ratio $x : (x-1) : 2$, wherein x means any desired value from 2 to 5 and

wherein the diol component is selected from the group consisting of combinations of

20 to 80 mol% hydrogenated bisphenol A with 80 to 20 mol% 1,10-decanediol,

20 to 80 mol% hydrogenated bisphenol A with 80 to 20 mol% 1,6-hexanediol,

60 to 90 mol% neopentyl glycol with 40 to 10 mol% 1,6-hexanediol, and

three-component combinations comprising in each case 10 to 50 mol% 1,3-propanediol, 10 to 50 mol% 1,5-pentanediol and 10 to 50 mol% 1,6-hexanediol, wherein the mol percentages add up to 100 mol% in each of the combinations.

The Reference

Blum

WO 01/25359²

Apr. 12, 2001

The Rejection

Claims 1, 4, 7 and 10 stand rejected under 35 U.S.C. § 103 over
WO 01/25359.

OPINION

We affirm the Examiner's rejection.

Issue

Have the Appellants shown reversible error in the Examiner's determination that the Appellants' evidence of unexpected results does not overcome the prima facie obviousness of the Appellants' claimed invention over Blum?

Findings of Fact

Blum discloses coating, adhesive and sealing compounds in powder form having urethane groups containing bonds which can be activated by actinic radiation (col. 3, ll. 33-36, 44-45). The properties of the coatings, adhesives and seals include scratch resistance and chemical resistance (col. 3, ll. 45-49). In Blum's Example 5, a powder coating composition is made from reagents including 2.5 mol hexamethylene diisocyanate, 1 mol ethylene glycol, 0.5 mol butane-1,4-diol and 2 mol hydroxyethyl acrylate (col. 21, ll. 48-61). Thus, that example meets the x: (1-x) : 2 molar ratio requirement of the Appellants' claim 1 for x = 2.5, i.e., 2.5 hexamethylene diisocyanate: (2.5-1=1.5) ethylene glycol + butane-1,4-diol: 2 hydroxyethyl acrylate. Blum's disclosed diols include hydrogenated bisphenol A,

² Citations herein are to US 6,825,241 B1, which the Examiner relies upon as an English language equivalent of WO 01/25359 (Ans. 3).

1,6-hexanediol, neopentyl glycol, 1,3-propanediol, and 1,5-pentanediol (col. 10, ll. 56-65).

Analysis

When a prima facie case of obviousness has been established, the Appellants have the burden of rebutting it by presenting objective evidence of non-obviousness. See *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). A final determination regarding obviousness is then reached by starting anew and evaluating the rebuttal evidence along with the evidence upon which the conclusion of prima facie obviousness was based. See *In re Rinehart*, 531 F.2d 1048, 1052 (CCPA 1976).

The Appellants do not challenge the Examiner's conclusion of prima facie obviousness but, rather, argue that they have provided evidence of unexpected results which overcomes the prima facie case of obviousness (Ans. 5). The Appellants rely upon two declarations by Carmen Flosbach (Declaration I filed March 9, 2006, and Declaration II filed August 3, 2006).

In Declaration I Flosbach compares the acid resistance and scratch resistance of the powder coatings in the Appellants' Examples 1-6 and 11 with Blum's Example 5 (Declaration I, p. 3). That comparison shows that in all of the Appellants' examples both the acid resistance and the scratch resistance were acceptable, whereas in Blum's Example 5 the scratch resistance was acceptable but the acid resistance was slightly low (a value of 9, where acceptable acid resistances are greater than 10). Flosbach states that "the coating compositions of the present invention provide with [sic] an unexpected and superior result in terms of Acid Resistance and Scratch Resistance" (Declaration I, p. 3).

In Declaration II Flosbach replaces the hydroxyethylacrylate in Examples 1, 5 and 6 with hydroxypropylacrylate, and replaces the hydroxypropylacrylate in Example 11 with hydroxyethylacrylate (Declaration II, p. 2). In each of those modified examples both the acid resistance and scratch resistance were acceptable (Declaration II, p. 3). Flosbach states that “the acceptable acid and scratch resistance demonstrated for Examples 1, 5, 6 and 11 occurs for coatings that use either hydroxyethylacrylate or hydroxypropylacrylate as the hydroxy-C2-C4-alkyl (meth)acrylate component.” *See id.*

The Examiner argues that the Appellants’ claims encompass Blum’s “x” value of 2.5, yet the Appellants have not compared to Blum’s composition an inventive composition having an “x” of 2.5 (Ans. 4).

The Appellants argue that an “x” of 2.5 corresponds to a hexane diisocyanate (HDI) mol percent of 41.6, and that the Appellants have presented examples having “x” values of 2 (40 mol% HDI) and 3 (42.8 mol% HDI) (Br. 10; Reply Br. 3-4).

In the Appellants’ examples wherein the “x” is 3 (Examples 2, 3, 5-8 and 11), the acid resistances range from 11 to 23 and the scratch resistances range from 64 to 82 (Declaration I, p. 3). Those broad ranges for the same “x” value indicate that a proper side-by-side comparison of the Appellants’ claimed invention with Blum requires comparison at Blum’s “x” value of 2.5. The cause-and-effect relationship in the Appellants’ comparison is lost in multiple unfixed variables. *See In re Heyna*, 360 F.2d 222, 228 (CCPA 1966); *In re Dunn*, 349 F.2d 433, 439 (CCPA 1965).

The Appellants argue that their comparisons at “x” values of 2 and 3 are commensurate in scope with the claims (Reply Br. 4). The Appellants’

claim 1, which is the sole independent claim, encompasses three two-component diol combinations and one three-component diol combination, all of the diols in those combinations except 1,10-decanediol being specifically disclosed by Blum (col. 10, ll. 56-63), and encompasses wide ranges of the amounts of the diols in those combinations, yet only the particular compositions in the Appellants' Examples 1-6 and 11 have been compared to Blum's Example 5 composition. We find in the evidence of record no reasonable basis for concluding that the combinations and amounts of diols encompassed by the Appellants' claims would behave as a class in the same manner as the particular materials tested. *See In re Lindner*, 457 F.2d 506, 508 (CCPA 1972); *In re Susi*, 440 F.2d 442, 445-46 (CCPA 1971).

Moreover, it is not enough for the Appellants to show that the results for the Appellants' invention and the comparative examples differ. The difference must be shown to be an unexpected difference. *See In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). The Appellants have not established that the results of their comparison would have been unexpected by one of ordinary skill in the art. Although the acid resistance for Blum's Example 5 is unacceptable to a slight degree, the scratch resistance in that example is better than the scratch resistances in the Appellants' Examples 1-6 (Declaration I, p. 3) and modified Examples 1, 5 and 6 (Declaration II, p. 3). The Appellants have not established that it would have been unexpected by one of ordinary skill in the art that a coating having increased scratch resistance would have decreased acid resistance. In the Appellants' Example 11 and modified Example 11 both the acid resistance and scratch resistance are better than

those in Blum's Example 5, but the Appellants' claims are not limited to those examples.

For the above reasons the Appellants' evidence is ineffective for overcoming that prima facie obviousness.

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that the Appellants' evidence of unexpected results does not overcome the prima facie obviousness of the Appellants' claimed invention over Blum.

DECISION/ORDER

The rejection of claims 1, 4, 7 and 10 under 35 U.S.C. § 103 over WO 01/25359 is affirmed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1122B
4417 LANCASTER PIKE
WILMINGTON, DE 19805